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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/690,635	10/23/2003	Kunihiko Fukuchi	740756-2661	9151
22204	7590	07/25/2005	EXAMINER	
NIXON PEABODY, LLP 401 9TH STREET, NW SUITE 900 WASHINGTON, DC 20004-2128			MCDONALD, RODNEY GLENN	
			ART UNIT	PAPER NUMBER
			1753	

DATE MAILED: 07/25/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/690,635

Applicant(s)

FUKUCHI ET AL.

Examiner

Rodney G. McDonald

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☐ Responsive to communication(s) filed on ____.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-30 is/are pending in the application.
- 4a) Of the above claim(s) ____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) ____ is/are allowed.
- 6) ☒ Claim(s) 1-30 is/are rejected.
- 7) ☐ Claim(s) ____ is/are objected to.
- 8) ☐ Claim(s) ____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on ____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. ____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date 10/03, 4/04.
- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. ____.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: ____.

DETAILED ACTION

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

Claims 1, 7, 4 and 10 are rejected under 35 U.S.C. 102(e) as being anticipated by Sato et al. (U.S. Pat. 6,855,236).

Regarding claims 1, 4, to a sputter process and sputter system in which the a layer of aluminum and a layer of titanium in the order are spray deposited on the earth shield 13, the upper deposition preventive plate 14, the deposition preventive plate 15 and the platen ring 17 of the sputtering apparatus of Fig. 7. (Column 16 lines 13-20) The target to be used for depositing is Ti such that the spray deposit is the same as the target. (Column 16 lines 42-45) The film to be formed is a TiN film when nitrogen is used as a sputtering gas. (Column 16 lines 45-47)

Regarding claims 7, 10, as discussed above the shield, can be coated with the Ti spray coating. (See Sato et al. discussed above) Further in Fig. 7 a contamination plate, a backing plate, a current plate, a substrate holder and an inner wall of the chamber are all shown to be coated with the spray coating 3 of Ti. (See Fig. 7)

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

Claims 17, 20, 25 and 26 are rejected under 35 U.S.C. 103(a) as being unpatentable over Sato et al. (U.S. Pat. 6,855,236) in view of Sahase et al. (Japan 4-032563).

Regarding claims 17, 20, 25, 26, Sato et al. is discussed above and teach forming film of TiN. The sputtering system is first prepared by providing a titanium target and coating a part such as a shield of the sputtering system with a spray coating of titanium which is the same material as the target. (See Sato et al. discussed above)

The difference not yet discussed is where a high frequency power is utilized and where a rare gas is utilized.

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Sahase et al. teach utilizing a rare gas such as Ar with nitrogen to produce TiN films. The power utilized is high frequency power. (See Abstract)

The motivation for utilizing a rare gas and high frequency power is that it allows for depositing a TiN film. (See Abstract)

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to have modified Sato et al. by utilizing a rare gas and high frequency power as taught by Sahase et al. because it allows for producing TiN films.

Claims 1-26 are rejected under 35 U.S.C. 103(a) as being unpatentable over Katsura et al. (U.S. Pat. 4,933,063) in view of Noriaki et al. (Japan 08-277461).

Regarding claims 1, 2, 3, 4, 5, 6, 17, 18, 19, 25, Katsura et al. teach a sputtering system. The target material is formed of high purity quartz (i.e. SiO_2). Thus the target comprises the semiconductor material of Si. (Column 3 lines 49-50) A protection plate and substrate holder 18 are formed of stainless steel, and side surfaces of protection plate and substrate holder near target 16 are entirely coated with quartz films 15b and 18A (i.e. films of SiO_2). Thus the coating on the parts of the apparatus comprises a semiconductor material and the coating is an oxide of semiconductor material. (Column 3 lines 65-68) The film formed was SiO_2 which is an oxide of the semiconductor material. (Column 4 lines 63-65) A rare gas of argon is utilized for sputtering. (Column 16 lines 27-32) A high frequency power source is used for sputtering. (Column 4 lines 12-15)

Regarding claims 7, 8, 9, 10, 11, 12, 20, 21, 22, 26, the substrate holder can be coated with the SiO_2 for example. (Column 2 lines 65-68)

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Regarding claims 13, 14, 15, 16, 23, 24, the semiconductor is "Si". (Column 3 lines 49-50; Column 3 lines 65-68; Column 4 lines 63-65)

The differences between Katsura et al. and the present claims is utilizing spray coating to coat the parts of the chamber.

Noriaki teach when sputtering a dielectric target to thermal spray a coating of SiO₂ on parts of the sputtering chamber prior to sputter coating in order to minimize dust generation. (See Abstract)

The motivation for utilizing a thermal spray coating of SiO₂ is that it allows for minimizing dust generation. (See Abstract)

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to have modified Katsura et al. by utilizing a spray coating of silicon dioxide on surfaces of the chamber as taught by Noriaki et al. because it allows for minimizing dust generation.

Claim 27 is rejected under 35 U.S.C. 103(a) as being unpatentable over Katsura et al. in view of Noriaki et al. as applied to claims 1-26 above, and further in view of Sproul et al. (U.S. Pat. 5,942,089).

The difference not yet discussed is where the target to be used is silicon.

Katsura et al. recognize that not only silicon dioxide targets can be used for the target but other metals that might peel off. (Column 6 lines 15-22) Sproul et al. teach that numerous metals including silicon can be used for target material for depositing oxides in atmospheres of oxygen and argon. (Column 5 lines 43-46)

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The motivation for utilizing a silicon target is that it allows for deposition of compound films. (Column 5 lines 34-35)

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to have utilized a silicon target as taught by Sproul et al. because it allows deposition of compound films.

Claims 28 and 29 are rejected under 35 U.S.C. 103(a) as being unpatentable over Schachter et al. (U.S. Pat. 4,732,659) in view of Shin (U.S. Pat. 5,703,668) and Katsura et al. (U.S. Pat. 4,933,063).

Schachter et al. teach in Fig. 3 depositing a semiconductor, depositing an insulator and depositing a gate electrode. (See Fig. 3)

The differences between Schachter et al. and the present claims is that depositing silicon dioxide over the electrode is not discussed and preparing the sputtering system for coating by coating a part comprising the same material as the target material.

Shin teach depositing a protective layer 42 over an electrode of a TFT. The protective layer is made of silicon dioxide and deposited by sputtering. (Column 4 lines 33-35)

The motivation for depositing silicon dioxide over the electrode is that it allows protecting the substrate. (Column 4 lines 32-35)

Katsura et al. is discussed above and teach providing a silicon dioxide target and a coated part coated with silicon dioxide for sputtering a layer of silicon dioxide on a

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wafer. High frequency is utilized for sputtering and argon gas is utilized. (See Katsura et al. discussed above)

The motivation for utilizing a part with a coating comprising the same material as the target material is that it allows for reducing dust particles in an apparatus. (Column 2 lines 22-26)

Therefore, it would have been obvious to one of ordinary skill in the art to have modified Schachter et al. by utilizing a layer of silicon dioxide over the substrate as taught by Shin and to have utilized a part with a coating comprising the same material as the target material as taught by Katsura et al. because it allows for protecting the substrate and for reducing dust particles in an apparatus.

Claim 30 is rejected under 35 U.S.C. 103(a) as being unpatentable over Schachter et al. in view of Shin and Katsura et al. as applied to claims 28 and 29 above, and further in view of Sproul et al. (U.S. Pat. 5,942,089).

The difference not yet discussed is where the target to be used is silicon.

Katsura et al. recognize that not only silicon dioxide targets can be used for the target but other metals that might peel off. (Column 6 lines 15-22) Sproul et al. teach that numerous metals including silicon can be used for target material for depositing oxides in atmospheres of oxygen and argon. (Column 5 lines 43-46)

The motivation for utilizing a silicon target is that it allows for deposition of compound films. (Column 5 lines 34-35)


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Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to have utilized a silicon target as taught by Sproul et al. because it allows deposition of compound films.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Rodney G. McDonald whose telephone number is 571-272-1340. The examiner can normally be reached on M- Th with Every other Friday off.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Nam X. Nguyen can be reached on 571-272-1342. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).


Rodney G. McDonald
Primary Examiner
Art Unit 1753

RM
July 21, 2005